A.3.3 SWMU 12

Description

SWMU 12 consists of three suspected 20-foot by 20-foot TEL sludge burials located in the western half of Tank Basin 27. The investigation area was identified based on the indicated presence of the burial on the Refinery Leaded Burial Map. During the first phase of the RFI (1995), eight soil borings were installed and two soil samples were collected to characterize this SWMU. The boring log from SB-0047, which is the boring containing elevated concentrations of 2,4-dimethylphenol, TEL and lead, described the fill material as a gray silt with traces of black or dark gray staining.

As shown on Figure A.3.3 and summarized on Table A.3.3, 20 borings, 13 soil samples, and two groundwater samples have been used to characterize this SWMU. Two of the soil samples were analyzed for Skinner's List VOCs and SVOCs, metals, and TEL during the 1st-Phase RFI. Nine soils were analyzed for TCL VOCs and SVOCs and ten samples were analyzed for lead and TOL. Two additional samples were collected in January 2003 to delineate the southern boundary of this SWMU. One of the samples was analyzed for BTEX and the other sample was analyzed for phenols, TOL and lead. In addition, one soil sample (S0731B1) was analyzed for physical characteristics[1], and one sample (S0732C1) was analyzed for SPLP lead.

Soils

The following table summarizes the number of samples where the delineation criteria were exceeded in soil samples:

Constituents of Concern	Surface Soils (0 to 2 feet)	Fill Material (>2 ft)	Native Soils	Total
Benzene	0/3	1/6	0/3	1/12
Other VOCs	0/3	2/6	0/3	2/12
Benzo(a)pyrene	0/3	0/5	0/3	0/11
Other SVOCs	0/3	1/6	0/3	1/12
Lead	0/3	1/6	0/3	1/12
TOL/TEL	0/3	1/6	0/3	1/12

Surface Soils (0 to 2 feet bgs)

Odors (H0288) and elevated PID readings (U0120009) were noted in surface soils at two locations in the vicinity of SWMU 12. However; no COCs were detected above the applicable soil delineation criteria in any of the three surface soil samples.

[1]Physical characteristics include saturated and unsaturated permeability tests, moisture content, relative permeability, bulk density, porosity, soil sorptive capacity, CEC, TOC, pH, Eh and grain size distribution.

Subsurface Fill Materials (>2 feet bgs)

Staining, odors and elevated PID readings were noted in several of the subsurface fill samples at SWMU 12. The fill layer is generally between four and 10 feet thick at SWMU 12. Benzene (5.18 mg/kg) and total xylenes (303 mg/kg) were detected above the applicable soil delineation criteria in one of the fill samples (S0732C1) collected from a depth of 4 to 4.5 feet bgs. Xylenes (94 mg/kg) were also detected above the applicable soil delineation criterion in a second sample (SB0048SB).

Native Material

A clay/silt layer underlies the fill layer at depths ranging from approximately four feet to 10 feet bgs. No constituents were detected above the applicable soil delineation criteria in any of the three native soil samples. Therefore, the exceedances of soil criteria are vertically delineated.

Groundwater

Arsenic, lead, benzene and xylenes were detected above the applicable groundwater delineation criteria in one of the groundwater samples (H0194) collected in the vicinity of SWMU 12. Elevated concentrations of arsenic, lead and benzene were also detected in groundwater samples collected as part of the OWSS Phase II Investigation at locations believed to be sidegradient to SWMU 12. However, based on a comparison of hydropunch samples (collected via traditional methods as well as with porous media) to samples from nearby monitoring wells, SVOC and metals data collected from temporary well points are not considered to be representative of ambient groundwater conditions.

MW-104 is located approximately 100 feet from SWMU 12 in a downgradient direction. No COCs were detected in this well above the groundwater criteria, although 3-methy-3-pentanol and one unknown SVOC TIC, were detected above the applicable groundwater delineation criteria in the December 2002 sample from MW-104.

Summary

In summary, three soil samples contained the following compounds at concentrations greater than the applicable soil delineation criteria:

- The two to four-foot sample from SB0047 contained 2, 4-dimethyl phenol (16 mg/kg), lead (1,060 mg/kg), and TEL (2.67 mg/kg);
- The two to four-foot sample from SB0048 had total xylenes at 94 mg/kg; and,
- The 4 to 4.5-foot sample from S0732 contained benzene and xylenes at 5 and 303 mg/kg respectively.

No other compounds were detected above the delineation criteria in any of the other soil samples from this SWMU. Therefore, the surface soil (zero to two feet bgs) is a barrier

for exposures to impacted subsurface soil that has also been delineated vertically as the native material had no exceedances.

Although elevated concentrations of arsenic, lead, benzene, and xylenes were detected in one of the groundwater samples (H0194) collected in the vicinity of SWMU 12, none of these analytes were detected above the groundwater criteria in MW-105, which is located approximately 100 feet downgradient of this SWMU.

In summary, this SWMU has been fully delineated and will be included for further evaluation in both the soils and site-wide groundwater portions of the CMS.